

Salmonella enterica baseline for hides, carcasses, and lymph nodes of cattle presented for slaughter in Honduras

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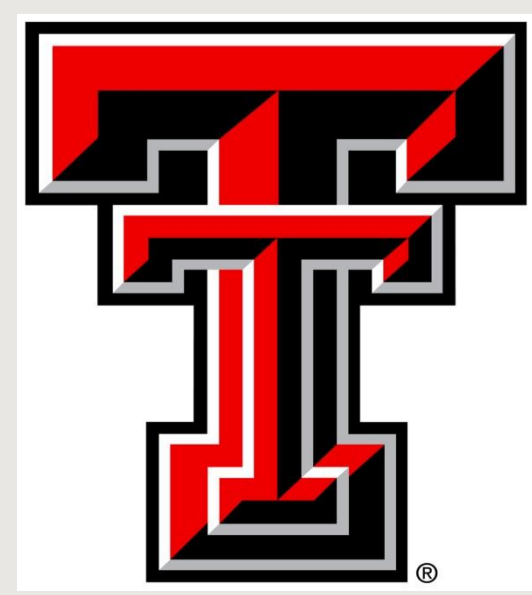
Introduction

- Food insecurity is a serious issue facing the world's food industry. Many efforts have been made in the past decade to reduce extreme poverty and hunger, yet 805 million people in the world remain chronically undernourished (FAO, 2015). The limited feed sources in Honduras have led to multiple exports to surrounding countries causing a decline in the number of cattle in the country over the past years. In an effort to design a sustainable feed program for Honduras, a diet was formulated to increase the amount of edible meat per carcass by 30%. Diets were based on African palm, sugar cane, and poultry litter as a source of protein and urea. Since poultry litter is a possible source of *Salmonella enterica* contamination, it was critical that these diets did not create a new problem while attempting to alleviate another.
- Salmonella enterica* is considered a major cause of foodborne illness throughout the world, with millions of human cases occurring worldwide every year. In regards to Latin America, *Salmonella enterica* infections have a public health, economic and social impact more severe than developed countries such as the United States (Maradiaga, 2012). *Salmonella enterica* has a notable health impact in Honduras, causing diarrhea in children under 5 years of age, increasing morbidity and mortality (Maradiaga, 2012).
- The development of a *Salmonella enterica* baseline for Honduras will aid in developing a fuller picture of the types of contamination that exist in the country and ultimately, allow for the incidence control of *Salmonella enterica* in the food system and public health.

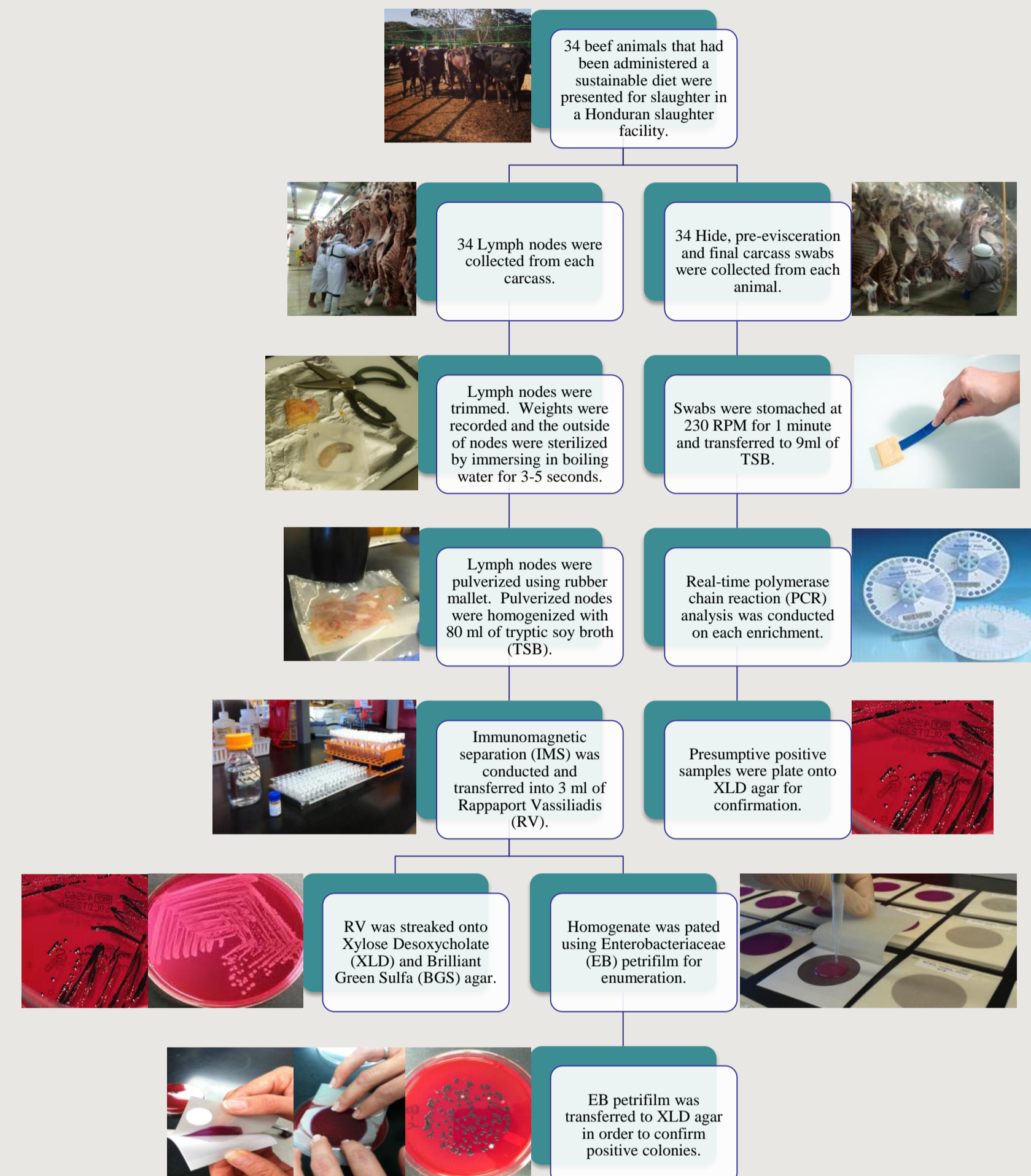


Objective

To determine if *Salmonella enterica* was present in bovine lymph nodes, hides and carcasses from cattle fed the sustainable diet. As well as to create a *Salmonella enterica* baseline in beef cattle presented for slaughter in Honduras.



Methods



Results

Results for this study indicated that *Salmonella enterica* prevalence in beef cattle presented for slaughter was quite low. Out of 34-swabs/sample type only three were positive; one hide (2.94%), one pre-evisceration (2.94%) and two final carcass swabs (5.88%). A total of seven lymph nodes were positive (20.59%). Concentration data for positive lymph nodes indicated that positive lymph nodes have higher than a 2-log concentration on a per/node basis and close to a 4-log concentration on a per/g basis.

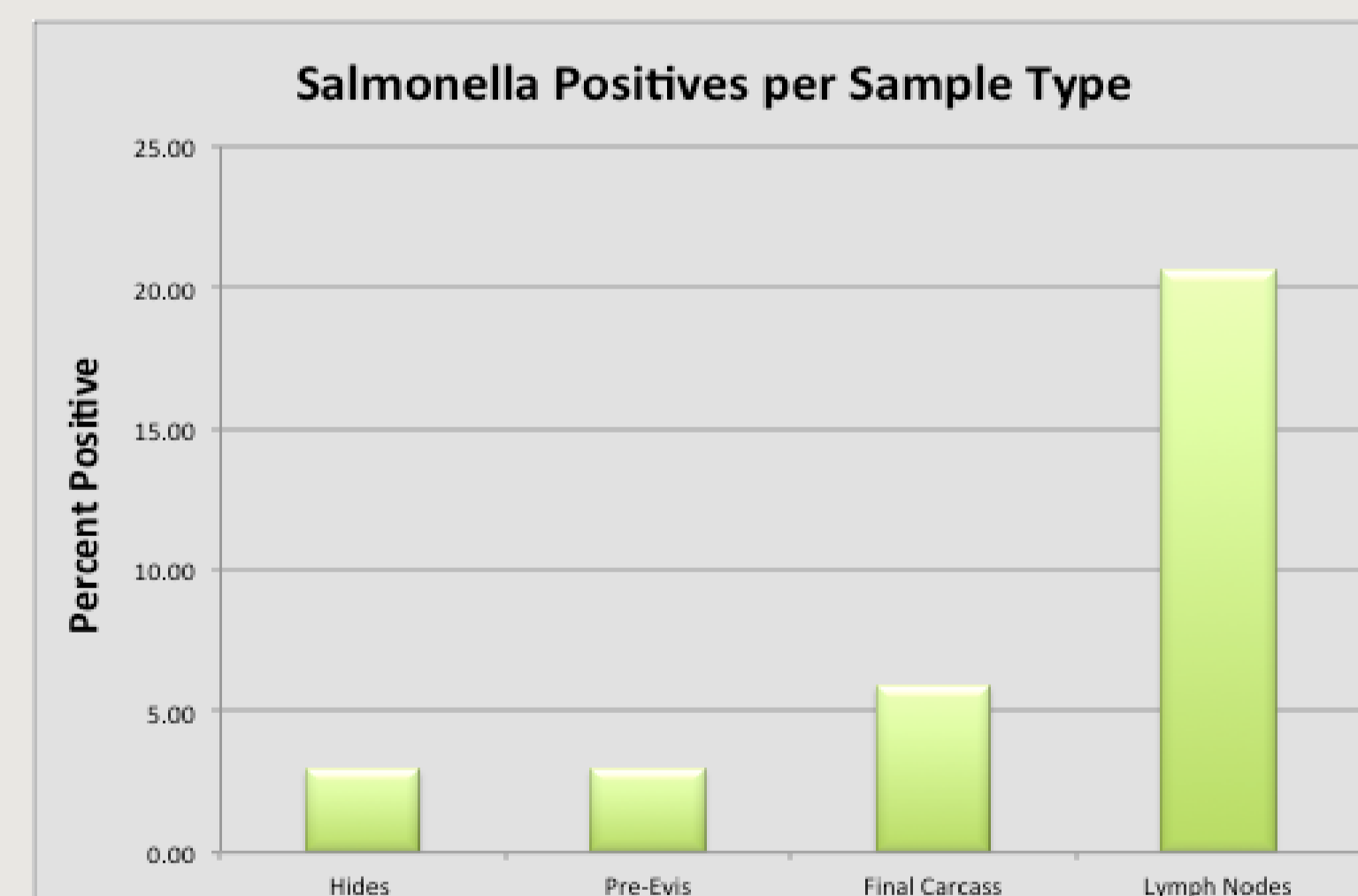


Figure 1. Depicts prevalence data on a percentage basis for each sample type.

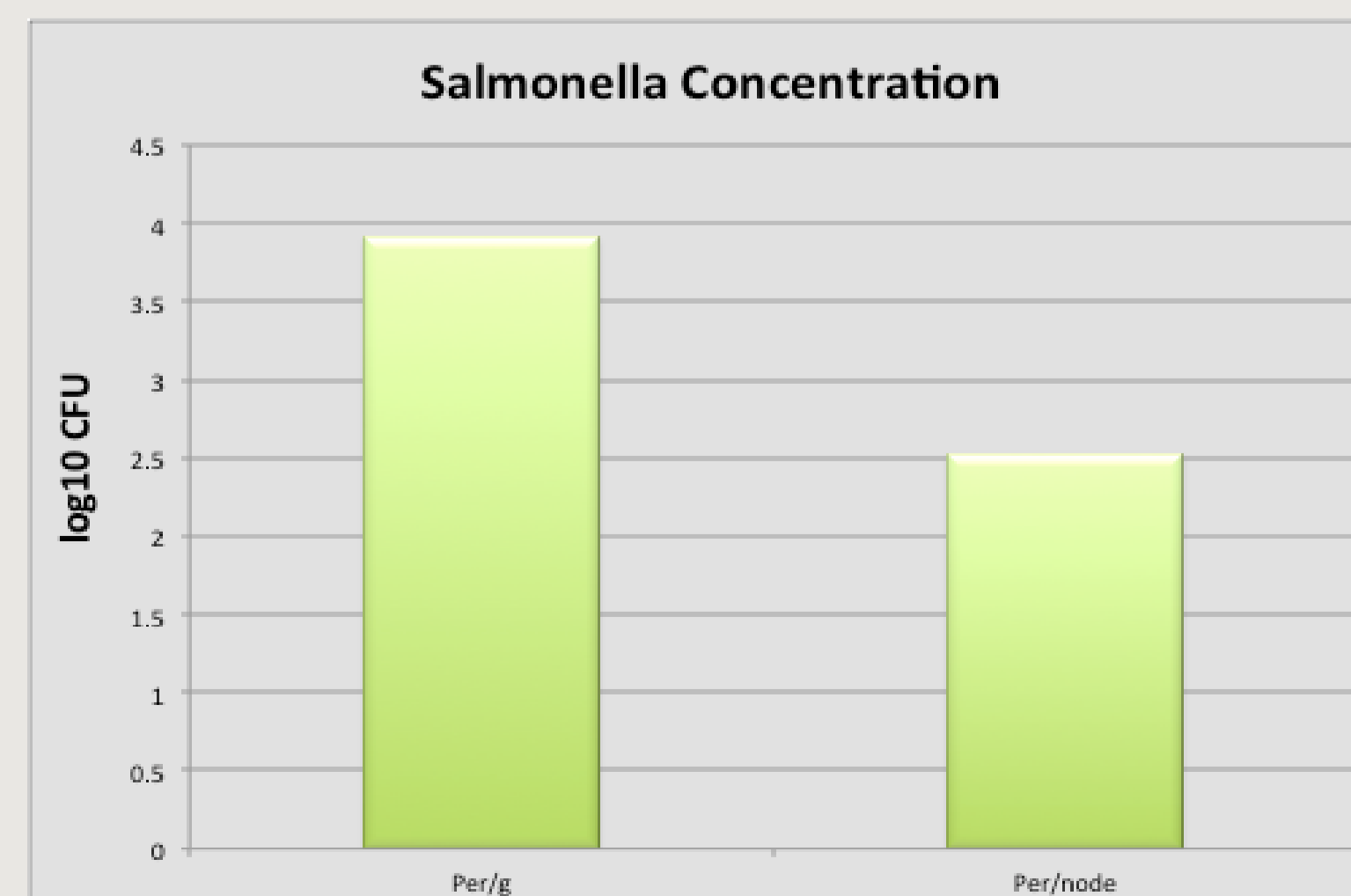


Figure 2. Depicts concentration data on a log₁₀CFU on a per/g and per/node basis.

Conclusion

- As more research is focused on alleviating food insecurity in Latin America, it will be more critical for baseline research, particularly research that asses programs implementation and their impact on food safety. This research indicates that feeding poultry litter is not negatively affecting *Salmonella enterica* prevalence in cattle at slaughter. However, it is important to note that this data is a snapshot in time and further research is necessary. Furthermore, the development of baselines will further our understanding of Honduras's situation referring to *Salmonella* presence.
- Past research has found similar results to the present, with a relatively low level of *Salmonella enterica* incidence in Honduras. However, there was some *Salmonella enterica* present on the final carcasses and more final carcasses were contaminated than hides, indicating cross-contamination during harvest. Good dressing procedures are necessary during harvest to prevent product contamination.
- Results from hide and carcass swabs indicate a low amount of *Salmonella enterica* prevalence, however, lymph node contamination—on a percentage basis—is similar to what has been previously observed in other beef production facilities in the US.

Recommendations

- Sustainable diets should be continued to be implemented and monitored in order to improve beef production for Honduras.
- Continuity to this baseline should be determined. If trends towards a low *Salmonella enterica* prevalence continues in subsequent studies Honduras cattle producers will have data to support the safety of their product.
- A fuller picture about the types of contamination that exist in the country and how interventions can be used to control and reduce the incidence of *Salmonella enterica* in the food system and public health should be developed.

References

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